

# Upper Swift Creek Plan (Proposed)

*A proposed amendment to the Upper Swift Creek Plan, first adopted by the Chesterfield County Board of Supervisors on February 13, 1991.*

## Status of This Proposed Amendment

**Version:** Proposed plan amendment recommended by Planning Department staff as of June 30, 2006.

This is a proposed amendment to the *Upper Swift Creek Plan*, first adopted by the Chesterfield County Board of Supervisors on February 13, 1991, then amended by the Board on March 15, 2000. This proposed plan is anticipated to go through numerous reviews and revisions before adoption by the Board of Supervisors.

### Anticipated Additional Plan Review Steps:

- Planning Commission work session(s) – first work session scheduled for September 20, 2005
- Citizen information meeting(s)
- Planning Commission public hearing(s) and recommendation
- Board of Supervisors public hearing(s) and final disposition

The supporting documents referenced in this plan are not part of the plan and will not be published in the *Plan for Chesterfield*, but will be available through other sources.

For more information on the status of the proposed Upper Swift Creek Plan, see the Planning Department website at [www.chesterfield.gov/plan](http://www.chesterfield.gov/plan) or contact project manager Jim Bowling at [Bowlingj@chesterfield.gov](mailto:Bowlingj@chesterfield.gov) or 804/748-1086.

**Note:** This section will be removed from the plan upon adoption

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## Summary of Key Findings and Recommendations

- **Balanced, Orderly Growth:** The proposed *Upper Swift Creek Plan* balances the demand for residential, commercial and industrial growth in the Upper Swift Creek watershed with a recommended orderly development pattern based on two important concepts: a deferred growth area in the northwestern part of the planning area, mandatory utilities extension ordinances for development outside the "deferred growth" area, and a prohibition on extending utilities into the deferred growth area.
- **Economic development:** The proposed *Upper Swift Creek Plan* encourages economic development by recommending that many areas along Hull Street Road and around interchanges be reserved primarily for employment and other revenue generating uses.
- **Residential Development Potential:** Analysis undertaken in the development of this plan identified 15,668 dwellings in the planning area as of December 31, 2005, and projected that about 14,000 additional dwellings could be built on vacant land already zoned for development as of that date. This same analysis projected total residential build out for the planning area at about 50,400 dwellings under the 1991 *Upper Swift*

*Creek Plan*, and about 40,200 dwellings under this new plan (not including any subsequent development in the recommended deferred growth area, other than the suggested development recommended by this plan).

- **Unzoned Land Recommended For Residential Development:** Under this new plan, only about 15 percent (5,156 acres) of the total parcel acreage within the planning area remains vacant and agriculturally zoned, but recommended for development. This percentage is significantly affected by the amount of vacant land already zoned for development (as of December 31, 2005), and incorporation of the deferred growth area into the plan.
- **Deferred Growth:** This area, which totals about 4,900 acres, is recommended for primarily very low-density uses, with other types of development deferred until the plan is amended through a subsequent review.
- **Water Quality:** The plan recommends future land uses that, combined with established and planned best management practices, are projected to result in Swift Creek Reservoir phosphorous levels not exceeding the established 0.05 milligrams per liter standard.
- **Transportation:** This plan identifies transportation needs and recommends modifications to the county's *Thoroughfare Plan*.
- **Forested Views:** This plan promotes protection of scenic resources by recommending consideration of ordinance amendments to increase buffering along arterial roads.
- **Mandatory Utilities Extension:** The plan recommends that the utilities extension policy recommended by the 1991 *Upper Swift Creek Plan* be made mandatory through the adoption of county ordinances to require water and wastewater system connections for most types of development.

## I. Introduction

In April of 2003, the Chesterfield County Board of Supervisors asked County staff to undertake a review of the adopted *Upper Swift Creek Plan* in response to concerns regarding the impact of growth on infrastructure, water resources, and the environment. In particular, development trends within the planning area generated interest in reviewing recommendations of the plan, first adopted in 1991.

The *Upper Swift Creek Plan* is a tool that the county can use to shape the pace and pattern of development within the plan geography over time. Other tools are needed to address present, or near-term, growth issues. The plan also implements, updates, and refines selected recommendations of the 1991 plan based on what the county has learned and the area has experienced since that plan's adoption.

The 1991 *Upper Swift Creek Plan* had as its goals:

1. Maintenance of Swift Creek Reservoir's water quality.
2. Balance between residential and commercial growth.
3. Conservation of environmental and aesthetic resources.
4. Variety of housing types and opportunities.
5. Provision of high quality, yet efficient public facilities.
6. Access to both active and passive recreational opportunities.

The 1991 plan pursued these goals with recommendations for land use, phasing of development and public facilities. The county has subsequently implemented many of these goals through ordinance (such as the Historic Districts, Landmarks and Landmark Sites Ordinance, the Chesapeake Bay Preservation Areas Ordinance, and the Upper Swift Creek Watershed Ordinance), through amendments to other elements of the comprehensive plan (such as the *Water Quality Plan* and the *Public Facilities Plan*) and by using the adopted *Upper Swift Creek Plan* as a guide in the zoning process.

The *Upper Swift Creek Plan* amendment, as outlined herein, continues and expands upon this work.

## Planning Area Boundaries

The *Upper Swift Creek Plan* includes most of the geography of the 1991 *Upper Swift Creek Plan*. That small portion of the 1991 plan physically separated from the planning area by the 1998 *Route 288 Corridor Plan* is not included in the geography of this plan, but is included in the pending *Robious Area Plan*. The planning area includes most of the Upper Swift Creek watershed located within the jurisdiction of Chesterfield County.

## Magisterial Districts

The *Upper Swift Creek Plan* geography lies within the Matoaca Magisterial District (about 82 percent of the planning area geography), the Clover Hill Magisterial District (about 14 percent of the planning area geography), and the Midlothian Magisterial District (about four percent of the planning area geography).

## How this Plan Works

Chesterfield County's comprehensive plan, *The Plan For Chesterfield*, is used by citizens, staff, the Planning Commission and Board of Supervisors as a guide for decisions affecting the county, including, but not limited to, those regarding future land use, transportation networks and zoning actions. However, the *Upper Swift Creek Plan* represents only one part of the county's comprehensive plan. It is one of about twenty area, corridor and village plans, each of which focuses on managing and directing the future pattern of development within a specific geography of the county, taking into account the unique development pattern and development history of the area.

As any plan geography is but one part of the larger community of Chesterfield County, the needs of a specific area must be considered within the context of the needs of the county as a whole. Other components of *The Plan For Chesterfield* are countywide plans, which address issues and needs on a countywide basis. These include: the *Thoroughfare Plan*, the *Water Quality Protection Plan*, the *Public Facilities Plan*, the *Bikeway Plan* and the *Riverfront Plan*. Some of these plans, such as the *Public Facilities Plan*, require a countywide review process to determine how limited county resources should be distributed.

## Background Analysis

The Planning Department, in conjunction with other county departments, assessed existing conditions and development trends within the planning area. The results were summarized and shared with public officials and interested citizens throughout early phases of the plan development process. The following assessments and analyses serve as the basis for the Goals and Recommendations of this plan, and are available for review as supporting documents, A through I.

- Supporting Document A - Upper Swift Creek Plan Amendment: Existing Conditions and Issues
- Supporting Document B - Upper Swift Creek Plan Amendment: Land Use Analysis – Residential, Office, Commercial and Industrial
- Supporting Document C – Upper Swift Creek Plan Amendment: Transportation Options
- Supporting Document D - Technical Memorandum: Upper Swift Creek Plan Total Phosphorus Loading Analysis for Planned Land Use Scenarios
- Supporting Document E – Existing Conditions, Environmental Inventory
- Supporting Document F – Assessment of Biology, Habitat and Chemistry of Streams in the Upper Swift Creek Watershed, Chesterfield County, Virginia.
- Supporting Document G – Upper Swift Creek Watershed – Riparian Buffer Analysis
- Supporting Document H – Technical Memorandum: Construction Site Sediment and Total Phosphorus Loading
- Supporting Document I – Education and Outreach Program

## Citizen Participation

Planning Department staff, together with representatives of other county departments, met with area residents, community groups, property owners and businesspersons throughout the winter, spring, and summer of 2004 to discuss amending the 1991 *Upper Swift Creek Plan*. These meetings included: an education component on the comprehensive plan and its relationship to zoning, land development, and existing and future land use patterns; opportunities for citizens to share their concerns about existing development conditions and their desires for the future of their community; and opportunities for county staff to explain the limitations and opportunities, inherent in the plan amendment process, to address citizen concerns and desires.

## II. A Plan for Action

The *Upper Swift Creek Plan* will help guide future development in ways that balance the interests of Chesterfield County's current and future residents, landowners, businesses and development community. Specifically, the Code of Virginia defines the primary purpose of the comprehensive plan as follows:

To guide and accomplish a “coordinated, adjusted and harmonious development” of county lands “which will, in accordance with present and probable future needs and resources, best promote the health, safety, morals, order, convenience, prosperity and general welfare” of county citizens.

The *Upper Swift Creek Plan* makes no attempt to determine the current or short-term marketability of any one parcel for any one use. Rather, it attempts to anticipate future needs for broad categories of uses throughout the planning area for the next twenty years. In addition, the *Upper Swift Creek Plan* does not rezone land, but serves as a guide for making decisions relative to future rezoning applications. Finally, the plan attempts to suggest the proper relationship of land uses to one another

and to the wider community. Market forces (availability and price of land, location, character and age of competing businesses, site specific characteristics such as topography and visibility from roads, accessibility to roads, area demographics, etc.) will determine the desirability of a specific use on one parcel over another, as well as the timing for developing such use, based on the principle of 'highest and best use'. The zoning process will determine the appropriateness of such use on a case-by-case basis by applying principals of desirable land use development patterns and adequacy of public facilities embodied in the comprehensive plan.

The *Upper Swift Creek Plan* does seek to promote a balance between residential, commercial and industrial growth. Such balance contributes to the area's long-term economic strength, to revenue generation, and to fostering a greater sense of community by recommending future land uses that encourage housing, services, and employment, which can interrelate to create a sense of place.

To these ends, the Planning Commission and Board of Supervisors have incorporated into *Land Use Plan* amendments guidelines that promote development patterns, which facilitate the orderly, harmonious, predictable and efficient use of the 446.5 square miles of land and water within its boundaries. These guidelines, as they apply to specific plan areas of the county, are embodied in the goals and recommendations of adopted plan amendments.

## Goals and Recommendations - Land Use

### Land Use Goal 1: *Promote orderly development patterns.*

The foundation of The *Plan for Chesterfield* is orderly development as an overall approach to managing the county's future growth. Orderly development means that future growth should be directed into appropriate locations within existing, developed areas with fringe development being an orderly extension beyond current developed areas. *The Plan for Chesterfield* strives to manage growth by fostering an orderly and generally predictable pattern of development and promoting a timely, orderly and efficient arrangement of public facilities and services to serve existing and future development.

### Recommendations

- A. **Deferred Growth:** *Adopt the Deferred Growth area shown on the land use plan map for the western portion of the Upper Swift Creek Plan geography. Public water and wastewater should not be extended into this area until the plan is amended through a subsequent review.*

Providing a Deferred Growth area in the western portion of the plan geography will promote orderly development by discouraging leapfrog or sprawl development and promote efficient delivery of infrastructure to support growth.

Activities within the Deferred Growth area should be limited primarily to agricultural and forestall uses with single-family residences permitted along existing area roads on large parcels. Other types of development should be deferred until the plan is amended through a subsequent review.

Some deferral of development in the western portion of the plan geography is currently accomplished through the zoning process when owners/developers proffer the use of the public water and wastewater system. This has the effect of phasing development with the extension of utility lines. However, as zoning continues to occur in this portion of

the plan geography, development pressures may encourage the extension of utility lines at an accelerated pace. This accelerated pace could result in a leapfrog development pattern, with new subdivisions interspersed with undeveloped land. This pattern of development could overburden other public facilities, such as roads and schools, and adversely impact ground and surface water quality in the area for those area residents dependent on wells and septic systems. Adopting the Deferred Growth area in the western portion of the plan geography will reinforce current practices to promote orderly development and efficient delivery of infrastructure to support growth.

- B. Delay Utility Extensions:** *Consider ordinance amendments designed to prohibit connection to the public water and wastewater systems for uses within the deferred growth area until the plan is amended through a subsequent review.*

Development within the deferred growth area should be delayed until the plan is amended through a subsequent review. Prohibiting public water and wastewater extensions within the deferred growth area would be one means of ensuring that development is limited primarily to agricultural and forestall uses, with single-family residences permitted along existing area roads on large parcels, until such time that the status of the deferred growth area is reviewed through a subsequent plan amendment.

- C. Subdivision and Utilities Ordinances:** *Consider ordinance amendments to require mandatory connection to the public water and wastewater systems for most types of development.*

Use of the public water and wastewater systems will allow a flexibility of development that would not otherwise be possible. This flexibility could include residential development of a wider range of densities and configurations than would be possible without public water and sewer, as well as some control over the timing of development as new residential projects would have to wait for water and sewer extensions.

Use of water and wastewater is currently negotiated through the zoning process. Amending the utilities and subdivision ordinances to require mandatory use of water and wastewater would eliminate the need for such negotiations. In addition, extensions of water and wastewater services would continue to be used as a tool to phase, direct, and/or pace development.

## **Land Use Goal 2:** *Promote economic development opportunities.*

The *Plan for Chesterfield* encourages the designation of key locations for economic development. Once area major arterial roads are built or committed for construction, the areas suggested in the *Upper Swift Creek Plan* for Regional Mixed Use and Regional Employment Center uses will have access to markets. Vacant land in these areas, as well as improved properties with potential for redevelopment, should be reserved for employment generating uses. Commercial development serving these uses and larger markets would also be appropriate near the interchanges. New residential development, as well as piecemeal, strip commercial development should be discouraged in these areas.

### **Recommendation**

- A. Employment Generating Uses:** *Use the plan to discourage residential and retail commercial development from locations the plan recommends for employment generating uses. Retail and service uses that serve primarily surrounding employment*

*center uses may be appropriate when part of a larger industrial and/or office development. The scale and mix of such retail and service uses should be proportionate to the needs of the primary employment center uses and should not be built until the employment center uses have developed to a density sufficient to support such retail and service uses, without such retail and service uses having to rely on larger markets for financial success.*

Employment generating uses produce tax revenues, which defray the costs of providing services to county residents. In addition, such uses provide residents with jobs both within the county and close to home, thereby reducing commuting distances, travel time, air and water pollution and travel expenses. This, in turn, enhances the quality of life for working citizens and their families.

Generally, residential and retail commercial development in proximity to interchanges, together with potential pressure for additional non-employment development in other parts of the planning area may, if not properly evaluated, limit opportunities for development of employment generating uses. However, opportunities will arise over time for development of new employment generating uses in areas where adequate access and mitigating road improvements can be provided. Commercial nodes that support employment generating uses could be incorporated into the design of larger projects, further contributing convenience and to reducing travel distances. This strategy may require that pressure to develop in some locations, for uses other than employment generating uses, be discouraged until market conditions become conducive to employment development. However, such delay will benefit the community in the future by promoting, over time, a better-balanced development pattern.

### **Land Use Goal 3:** *Promote a greater variety of residential types.*

The *Plan for Chesterfield* encourages provision for a variety of residential areas, thereby allowing residents a choice of neighborhood and living environments.

#### **Recommendation**

- A. ***Residential Amendments Project:*** *As part of the Planning Department's on-going Residential Development Amendments project, consider various clustering, conservation/subdivision, and rural residential subdivision options as possible new Zoning Ordinance residential categories.*

The Planning Department has embarked on a project to update the residential portion of the county's zoning ordinance. Considering additional development options as part of the Residential Development Amendments project will offer opportunities to develop neighborhoods of unique character and sensitivity to the environment, while allowing residential development to occur at densities suggested by the comprehensive plan. Some of these new residential types could include standards designed to better preserve some of the existing natural and forested character of many properties as future residential zoning and subsequent development occurs. Options to achieve this goal could include, but should not be limited to, various clustering and conservation/subdivision configurations, increased setbacks and buffering along area roads to encourage preservation of forested views along roads, and connectivity between natural areas, between natural areas and neighborhoods, and between neighborhoods.

The existing forested landscape, stream valleys and natural areas of much of the planning area have scenic and passive recreational value which many residents and visitors find attractive. Opportunities exist to preserve the existing visual appeal of forested areas within the planning area, and to provide connectivity between natural areas and neighborhoods, as new development occurs. In addition, opportunities exist to create a greater variety of housing types and lifestyle choices for county citizens.

- B. Residential compatibility:** *Continue to use the zoning process to encourage new residential subdivisions with sole access through an existing or planned subdivision to meet or exceed the average lot size of, and have a density equal to or less than, the existing subdivision.*

The Plan for Chesterfield encourages actions that stabilize and improve the health of existing neighborhoods in order to forestall decline and blight and contribute to the overall health of the larger community. Residential developments of varying densities and lot sizes encourage variety in residential areas and offer County citizens a choice of neighborhoods, living environments and lifestyles.

New subdivisions developing within the study area increase the availability of housing in this part of the county. However, such residential development should be designed to protect existing neighborhoods and enhance the larger community.

**Land Use Goal 4:** *Preserve, protect and promote identified historic, scenic and natural resources.*

The *Plan For Chesterfield* encourages the preservation of historic, scenic and natural resources.

### **Recommendations**

- A. Adaptive Reuse of Historic Structures:** *Encourage the preservation of historic structures and sites by allowing adaptive reuse that is compatible with existing and anticipated area development. Specifically, historic structures may be appropriate for office or light commercial uses if the property owner retains the structure, is willing to have it designated as a Chesterfield County historic landmark, and mitigates impacts of commercial use on surrounding properties. However, such designations should be exclusive of property required for future infrastructure improvements, such as road rights-of-way.*

Many sites within the planning area have historic significance. These include 19th and early 20th century homes and structures. *The Plan For Chesterfield* encourages the identification and preservation of lands, sites and structures that have historic significance. Protection of such structures and sites through adaptive reuse offers opportunities for preserving, presenting and interpreting the county's historic heritage.

The 1991 *Upper Swift Creek Plan* identified 21 historic sites and structures for consideration for preservation. Since then, five of these resources have been lost, and others are degraded and could be impacted by development. However, a number of 19th and early 20th century structures (homes, churches, stores, etc.) remain, providing opportunities to preserve a sense of continuity for the community and contributing to the area's distinct sense of history and place.



- B. **Forested Views:** *Consider ordinance amendments to increase buffering along arterial roads in order to ensure that new residential developments along forested corridors preserve existing forested vistas adjacent to, but outside the ultimate rights of way of, area roads.*

The 1991 *Upper Swift Creek Plan* suggested that development throughout the area should preserve existing natural settings and vistas. It further suggested that the natural forested corridor along Genito Road, west of Swift Creek Reservoir, should be maintained with special design standards and with deep, densely wooded buffers. An ordinance amendment would better promote this recommendation as development occurs.

As the county continues to grow and develop, the forested character of some areas in the county, including much of the planning area, will be impacted by anticipated changes in land use patterns. However, by continuing the work begun with the 1991 Plan, opportunities exist to ensure that the existing forested vistas, as viewed from area roads, are preserved.

- C. **Conservation/recreation corridors:** *Use the plan to identify conservation/ recreation corridors.*

The planning area has several stream valleys with significant, undeveloped RPAs, much of which is currently protected from intense development by the county ordinances, as well as by state and federal regulations. These regulations are designed to preserve environmentally sensitive areas such as wetlands, wildlife habitat and floodplains, as well as to preserve mature trees and native vegetation. In addition, such corridors provide visual and distance separation between residential and non-residential development, as well as provide area residents and the employees of area businesses with opportunities for exercise, recreation, relaxation and education.

Some Resource Protection Areas (RPAs) and other environmentally sensitive areas are already zoned and/or developed for residential and commercial uses. However, many others are relatively undeveloped and may provide opportunities for open space preservation and recreational activities through various cooperative public/private efforts.

#### **Land Use Goal 5:** *Encourage land use transitions.*

The *Plan for Chesterfield* encourages land use transitions between less intense uses, such as residential neighborhoods, and more intense uses, such as commercial and higher intensity regional and employment generating uses, as a means of promoting orderly development patterns that are designed to protect neighborhoods.

#### **Recommendation**

- A. **Land Use Transitions:** *Use the plan to suggest land use transitions, including higher density residential and office uses, between lower density residential development and commercial and higher intensity employment generating uses.*

A hierarchy of land uses, from more-to-less intense uses, provides the best protection to residential neighborhoods. Other protections (buffers, orientation of uses, and design standards which reduce nuisances such as noise, and light, etc.) are supplemental mitigation to the primary protection provided by physical separation between

incompatible uses. Therefore, transitional uses contribute to the overall appearance and livability of the community.

Portions of the existing land use pattern within the planning area, particularly along Route 360, are characterized by residential areas adjacent to older commercial strip zoning and land uses. In some instances, these residential areas do not have the benefit of buffers or other mitigating design features to lessen the impact of adjacent, commercial activity. However, in many places, encouraging greater depths of non-residential zoning can afford opportunities to provide land use transitions between more intense uses and residential neighborhoods. In other places, where such depth is not available, developers may be able to work with nearby residents to incorporate design features that mitigate potential adverse impacts on nearby neighborhoods.

## Goals and Recommendations - Transportation

The automobile is and, for the foreseeable future will remain, the predominant mode of transportation in the Upper Swift Creek Plan area and in the county as a whole. Most roads in the Upper Swift Creek Plan area are substandard, and will have to be improved to accommodate even minor increases in traffic resulting both from development within the county and in the surrounding regions. The county's Thoroughfare Plan identifies the future road network needed to accommodate future traffic volumes. It has been the county's policy for development to construct planned roads (other than freeways) to help mitigate their traffic impacts. State funding has been used to improve existing roads. Funding from the Virginia Department of Transportation (VDOT) has been inadequate to address existing needs, and the prospects for additional state funding are uncertain at best. Alternate funding sources continue to be investigated to address the shortfall between needs and funding.

**Transportation Goal:** *Provide a safe, efficient, and cost effective transportation system.*

The county's Thoroughfare Plan, which was originally adopted by the Board of Supervisors in 1989, identifies right-of-way classifications of existing roads, and right-of-way classifications and general alignments of future roads. As development occurs in the Upper Swift Creek Plan area, in other areas of the county, and in the region, road improvements will be needed in this area to accommodate increasing traffic volumes and reduce congestion.

### Recommendations

**A. Thoroughfare Plan Modifications:** *Approve modifications to the adopted Thoroughfare Plan as shown on the map in Supporting Document C:*

1. Increasing the recommended right-of-way width on the proposed North/South Major Arterial ("Woolridge Road Extended") between Route 288 and the proposed East/West Major Arterial just south of Powhite Parkway Extended from 90 feet to 120 feet. A six-lane road will be needed to accommodate future traffic volumes on Woolridge Road. The additional right-of-way is needed to accommodate the six lane road;
2. Increasing the recommended right-of-way width on the proposed East/West Major Arterial north of Hull Street Road, connecting Otterdale Road and a large planned development (Magnolia Green), from 70 feet to 90 feet. This wider right-of-way will better accommodate traffic generated by the proposed land uses in this area;
3. Decreasing the recommended right-of-way width of Watermill Parkway from 90 feet to 70 feet. A grade-separation of this roadway is planned at the future Powhite Parkway Extension. With the construction of Woolridge Road Extended, the existing two-lane road will be adequate to accommodate the projected traffic volumes;
4. Deleting the proposed interchange on Route 288 south of the Genito Road overpass, and the East/West Major Arterial connecting the interchange to Old Hundred Road to the west, and to Warbro Road to the east. The interchange was originally planned to help promote economic development. However, the land uses being developed around the proposed interchange are lower in density than were anticipated, and the interchange is no longer needed;

5. Deleting Hensley Road between Spring Run Road and Springford Parkway. This section of Hensley Road has been constructed into a cul-de-sac at its western end as part of a recent development project;
6. Deleting the proposed East/West Collector connecting Otterdale Road with Fox Club Parkway. As a result of a recent zoning case, this proposed Collector will not connect with Fox Club Parkway;
7. Deleting the proposed East/West Major Arterial connecting Winterpock Road to Spring Run Road just south of Hull Street Road, and replacing it by adding McEnally Road between Winterpock Road and Spring Run Road as a 90 foot Major Arterial. This change is the result of approved zoning cases;
8. Deleting the proposed North/South Major Arterial that extends west from Otterdale Road north of Genito Road, crosses Powhite Parkway Extended, and connects to the proposed East/West Major Arterial. This change is the result of approved zoning cases, and is recommended due to topography and existing development;
9. Realigning the western section of the proposed East/West Major Arterial that currently aligns with Lacy Farm Road to the north, closer to the Norfolk Southern railroad line. The realignment is being considered in conjunction with a proposed zoning, and at the request of the developer and residents along Lacy Farm Road;
10. Realigning Powhite Parkway Extended and the proposed interchange in the Genito Road area. The realignment was requested by residents in this area (see Supporting Document C - Map: Realignment of Powhite Parkway Extended and Genito Road Proposed Interchange);
11. Realigning the intersection of the eastern end of Mount Hermon Road with the proposed North/South Major Arterial. The existing intersection is adjacent to the Norfolk Southern railroad crossing. Greater separation will better accommodate increased traffic volumes as the area develops;
12. Realigning the East/West Major Arterial connecting Otterdale Road Extended with Winterpock Road further to the north, and deleting the southern section of the North/South Arterial connecting this road with Beach Road. This change is the result of a zoning case in this area;
13. Realigning Mount Hermon Road north of Genito Road, and Mount Hermon Road Extended south of Genito Road. This realignment is necessary due to the location of a Church on the south side of Genito Road, and is consistent with the development of Horner Park;
14. Changes in the road network based on Magnolia Green development that include: 1) adding a proposed 70-foot North/South Collector connecting Duval Road west of Otterdale Road with the proposed East/West Arterial to the north; 2) shifting the alignment of the proposed Powhite Parkway; 3) relocating the proposed interchange on Duval Road to the proposed east/west major arterial; and 4) realigning other planned roads within Magnolia Green. These roads are shown on the Magnolia Green Master Plan;
15. Adding Ledo Road as a 70 foot Collector. This change is recommended due to the proposed land use in this area; and,
16. Providing cul-de-sacs on Otterdale Road at the Powhite Parkway Extension. This section of Otterdale Road has very poor alignment and no shoulders. The cost to reconstruct

the road would be excessive. The proposed East/West Major Arterial and Woolridge Road Extended, which will be constructed in conjunction with new development, will better accommodate increasing traffic volumes.

***B. Development Conforming To Thoroughfare Plan:*** Continue zoning and development review practices to encourage development proposals to conform to the Thoroughfare Plan with respect to the construction of road improvements and the dedication of right-of-way.

***C. Mitigation of Traffic Impacts:*** Continue zoning and development review practices to encourage development proposals to include mitigation of their traffic impacts by providing road improvements and controlling the number of direct accesses to major arterial and collector roads.

***D. Bikeway Plan:*** As improvements are provided on roads identified in the county's Bikeway Plan, continue to consider incorporating bicycle facilities.

Staff has evaluated the ability of the current Thoroughfare Plan, when fully in place, to accommodate the traffic generated by total build-out of the county. From a road capacity standpoint, the Thoroughfare Plan network, when completed, will adequately accommodate build-out traffic volumes.

While the Thoroughfare Plan, when fully developed, will be adequate to accommodate "build-out" of the county, most of the existing road network requires complete reconstruction today in order to accommodate even minor increases in traffic. Most of the existing roads in the Upper Swift Creek Plan area are currently unsafe. The roads have no shoulders, poor vertical and horizontal alignments, and must be improved to safely accommodate increases in traffic.

According to the Growth Analysis Report, the Planning Department has estimated that build-out of the entire county could take at least 50 or more years. Staff has estimated that it could cost approximately \$3 billion countywide to upgrade existing roads, excluding freeways, to accommodate the increased traffic resulting from build-out. Approximately \$400 million of those road costs would be in the Upper Swift Creek Plan area.

Improvements to some of these existing roads may be provided in conjunction with development projects. Other improvements will need to be funded through public sources. Based on current VDOT revenue forecasts, the county anticipates receiving an average of only about \$27 million per year in the coming years, countywide, to improve both Primary and Secondary roads. The prospects for additional state funding are uncertain at best. Even if the county were to receive \$27 million a year for the next 50 years, there would be an anticipated shortfall of approximately \$1.6 billion. A shortfall in funding for road improvements is not unique to Chesterfield County. It is impacting other localities around the state, and around the country.

Some of the road improvement funds available to the county are being used in the Upper Swift Creek Plan area. There are currently several road improvement projects, in and adjacent to the plan area, that are in the Secondary and Primary Six Year Improvement Plans, or that are otherwise funded:

- Hull Street Road – widen to 6 and 8 lanes from Swift Creek to Winterpock Road. The project is funded with state funds and county bond proceeds. Construction is anticipated to begin in the Spring of 2006.

- Hull Street Road – a project to add a fourth westbound lane on Hull Street Road from Route 288 to Old Hundred Road/Commonwealth Center Parkway. Construction is planned for Spring 2006.
- Bailey Bridge Road – three spot safety projects and one reconstruction project at various locations between Route 288 and Spring Run Road. One project has been completed. Anticipated construction start dates for the remaining projects range from Summer 2006 to Spring 2010.
- Spring Run Road – improve curves between McEnally Road and Bailey Bridge Road. Anticipated construction start date is Fall 2007.
- Woolridge Road south of Crown Point Road – improve curve. Construction is anticipated to start in 2008.

Several potential options have been considered for supplementing the road improvement funds received from the state. These options are outlined in the Supporting Document C: Upper Swift Creek Plan Amendment: Transportation Options

This plan makes recommendations on modifications to the county's Thoroughfare Plan. Winterpock Road is currently identified as a 90 foot Major Arterial. Staff has identified the need for Winterpock Road to be six lanes wide (120 foot wide right-of-way) to accommodate traffic volumes at total build-out of the county. However, most of the property along Winterpock Road has already been "roadstripped". Changing the recommended right-of-way width on Winterpock Road from 90 feet to 120 feet to accommodate the future six lane widening could adversely impact current residents along the road. Staff will only seek the wider 120 feet of right-of-way in conjunction with new development proposals.

Almost all roads in the county are the responsibility of and maintained by VDOT. However, Woolridge Road over Swift Creek Reservoir is a county road. The county has no road maintenance budget and no formal maintenance program. This section of Woolridge Road has three box culverts that are over 50 years old. The pavement section is substandard, primarily consisting of asphalt placed on top of soil. Any improvements to this section of Woolridge Road, estimated to cost between \$8 and \$9 million, would have to be funded by the county.

The county's Thoroughfare Plan includes the extension of the Powhite Parkway from its current terminus, through the Plan area, to Hull Street Road. During the design and construction of the extension, the County should coordinate with the appropriate Federal and State agencies and private entities to ensure that the highest water quality standards and practices are employed so that the quality of the Swift Creek reservoir will be preserved.

Rail Service

#### Rail Service

One railroad line passes through the Upper Swift Creek Plan area. This Norfolk Southern line is currently in use for limited freight service. The Richmond Area Metropolitan Planning Organization (MPO) recently commissioned a report on the feasibility of providing Light Commuter Rail transit service in the Richmond region. A section of the Norfolk Southern line east of the Plan area was recommended for use. The last recommended station was in the Midlothian Village area.

There have also been discussions concerning a more regional rail passenger service. One part of the service would utilize the Norfolk Southern line to accommodate the Richmond to

Lynchburg route. Improvements to the rail line would be necessary before the service could be initiated. There have been discussions about providing commuter rail service that would utilize the improvements to the line to extend commuter service further west than the Village of Midlothian. One of several proposed stations in the county would be located along Mount Hermon Road near County Line Road. The line would provide commuter rail service between western Chesterfield County and the Richmond International Airport. The proposal has not progressed beyond the discussion stage.

### Public Transportation

The Chesterfield County Coordinated Transportation Program, Access Chesterfield, provides transportation services for any Chesterfield County resident who is disabled, or over age 60, or who meets federal income guidelines regarding poverty levels. Transportation providers are contracted by the Chesterfield County Access Chesterfield program to provide transportation service within the Chesterfield County, Richmond, Petersburg, Hopewell and Colonial Heights metropolitan areas. The program offers advance reservations for ride sharing with other passengers.

RideFinders provides numerous transit programs and services in the Richmond region, including organizing vanpools in response to commuters' requests. RideFinders' vanpools presently serve locations in the county such as Brandermill and Midlothian. RideFinders also provides a matching service to assist commuters in organizing carpools.

### Bikeway Plan

The county's Bikeway Plan was adopted by the Board of Supervisors in 1989. The purpose of the Bikeway Plan is "to designate a coordinated system of bike facilities to connect county and state parks with other high bike traffic generators such as schools." The Bikeway Plan is not intended to designate roads that are appropriate for bicycle travel, but to identify routes where bikeway facilities should be provided in conjunction with future road improvement projects. In the Upper Swift Creek Plan area, Old Hundred Road, Genito Road, Spring Run Road, Bailey Bridge Road, and a section of Otterdale Road are designated in the Bikeway Plan as part of the "bikeway network". In accordance with the Bikeway Plan, staff will consider including bike facilities along these roads in conjunction with future road improvements.

### Park-and-Ride Lots

The Transportation Department has, on occasion, requested that developers consider including facilities to accommodate "park-and-ride" lots or commuter drop-off lots. These are areas that could be used by commuters to provide convenient places for carpoolers and vanpoolers to meet and park their cars. Developers have been reluctant to designate these areas, due to the requirement that additional parking areas also be provided. The Transportation Department will continue to request these areas when large-scale development occurs along major commuter routes. However, there is no intention at this time to make these areas a requirement.

## Goals and Recommendations – Environmental Quality

The boundary of Upper Swift Creek Plan amendment encompasses a portion of the 64.0 square miles (approximately 42,000 acres) that makes-up the Swift Creek Reservoir Watershed. The watershed is located in the northwest corner of the county. The headwaters of the watershed approximately 7000 acres are located in Powhatan County. The watershed drains to the Swift Creek Reservoir, one of the county's three drinking water sources. The Reservoir produces approximately eight million gallons of water per day (design 12Mgal/day), providing drinking water to 30 percent of the county's citizens. The rolling hills, hardwood forests, 1,700-acre Swift Creek Reservoir and eight major tributaries draws citizens to live, work and recreate in the region.

Approximately 7000 acres or 20 percent of the 35,000 acres contained within the county's portion of the watershed is developed. The remainder of the area has been recommended by county plans for significant change over the next 20 years. Because of this growth, continued vigilance and improved practices and standards should be encouraged to ensure that development within the watershed contributes to the maintenance of water quality of the reservoir and tributary streams.

To address the problem of urban runoff, under the Clean Water Act, in 1992, the U.S. Environmental Protection Agency (EPA) issued municipal storm water regulations. These regulations require large municipalities, including Chesterfield County, to obtain and comply with National Pollutant Discharge Elimination System (NPDES) permit to discharge storm water. In 1996, Chesterfield County obtained a Virginia Stormwater Management Program (VSMP) permit (also known as a municipal separate storm sewer system, or MS4, permit), issued through the Virginia Department of Conservation and Recreation (DCR). The permit requires the county to implement effective management practices and enact a local stormwater program to include education and outreach, public participation and involvement, illicit discharge detection and elimination, construction site runoff control, post-construction runoff control, and pollution prevention.

**Environmental Goal:** *Maintain state and federal water quality standards of Swift Creek Reservoir and its tributaries.*

This goal reflects the importance of protecting the Swift Creek Reservoir Watershed and its resources to preserve the reservoir as a viable source of drinking water. In addition, protecting the natural resources associated with the Reservoir (i.e. wetlands, streams, ponds, and lakes) provides for abundant habitat for wildlife and outdoors activities including fishing, hunting, birdwatching, and boating.



**Recommendations:*****A. Promote land uses and development standards that are consistent with the protection of critical natural systems within watershed and that will facilitate maintenance of state water quality standards for area streams and Swift Creek Reservoir.***

In 1997, the Board of Supervisors adopted a *Watershed Management Master Plan* for the Swift Creek Reservoir Watershed. The *Watershed Management Master Plan* includes an in-lake phosphorous limit and establishes measures such as a reduced phosphorous standard for new residential development and the construction of regional Best Management Practice (BMP) basins to filter pollutants to ensure that the 0.05 mg/L in-lake phosphorus limit is maintained under suggested land use conditions. The limit was a threshold intended to protect general water quality and to ensure the viable use of the reservoir as a drinking water source. Without adequate management strategies for the reduction of nutrients to Swift Creek Reservoir, a variety of detrimental water quality and treatment problems are possible. These include excessive algal blooms, taste and odor problems, and depleted oxygen levels, all of which lead to increased cost of water treatment. Additionally, the adverse effects of pollutants on fish and other aquatic organisms may limit the reservoir as a recreational water body. The regional Best Management Practice strategy has been met with resistance by state and federal agencies. Therefore, other means of protecting water quality need to be developed and employed as a means of protecting the watershed, its resources and the Reservoir.

- **Land Use Plan:** *Adopt a land use plan that is projected to result in future development that will have less of a water quality impact than the current Upper Swift Creek Plan (adopted in 1991 and amended in 2000).*

Annual total phosphorus loads were calculated for four scenarios, testing different residential densities for the future *Upper Swift Creek Plan*. In-lake phosphorus concentrations were predicted for each scenario. The results of this modeling showed that the land use modifications of the preferred land use plan anticipated by the recommended *Upper Swift Creek Plan* would have less impact on area water quality than the current, adopted plan. Modeling of the proposed land use scenario indicates that the incorporation of the deferred growth area is critical for the maintenance of the phosphorous levels within the Reservoir (see Supporting Document D).

***B. Protect and preserve the critical natural systems and areas within the watershed, which currently provide maintenance for water quality.***

While there has been a significant focus on the protection of Swift Creek Reservoir for the past fifteen years, there has not been adequate attention to the protection of other important environmental resources such as wetlands, riparian corridors and stream systems located within the watershed (Supporting Document E). The functions of these features are significant to watershed health, and any loss of these features will contribute to water quality degradation. While state and federal agencies regulate impacts on those resources, they are often impacted by permitted activities, and the mitigation of the impacts is allowed to take place outside of the county. Identifying the location, health, and loss or gain of these features is important to management of water quality.

- Maintain GIS layers identifying the location of critical systems.
- Evaluate these systems and identify those that are more critical for water protection or would benefit from rehabilitation.

- Mitigation for loss of resources should be required to take place within the watershed where the impact has occurred.
- Measures are needed to ensure that new development reduces the impacts to wetlands and streams and that the day-to-day activities of both residential and commercial uses lessen their impact on the important resources.

***C. Improve, restore and prevent further degradation of those resources that are degraded.***

The report *Assessment of the Biology, Habitat and Chemistry of Streams in the Upper Swift Creek Watershed, Chesterfield County, Virginia* (Supporting Document F) presents the physical, chemical and biological water quality data collected by Chesterfield County's Water Quality Section from 2002 to 2005, focusing on the streams of the Upper Swift Creek Watershed. Monitoring information is necessary to assess the overall effectiveness of the water quality management strategies. Information generated from the county's water quality monitoring programs should be used to identify systems, which are in need of restoration or rehabilitation. This information should be used to prioritize those systems so that limited resources may be targeted to areas that would benefit the most.

- **Stream and Wetlands** – Restoration is a collection of methods for improving degraded conditions or preventing the degradation of a stream or wetland. The county should continue to actively pursue compensatory mitigation projects as well as grant funding for stream and wetland restoration. .
- **Riparian Buffer** – The Chesapeake Bay Preservation Act requires riparian buffers along streams having perennial flow but does not necessarily address the condition of that buffer or its ability to maintain water quality. As part of a grant, to address the quality of riparian buffers, the county has recently completed an inventory of the riparian buffers within the Upper Swift Creek Reservoir Watershed (Supporting Document G). This inventory focused on the extent and quality of the stream buffer, to include vegetation types and tree canopy coverage. As part of the grant, a new GIS layer has been developed that will facilitate the identification of buffers that would benefit from or require restoration. This knowledge will aid in directing funds and potential grant funding to buffer areas where water quality would benefit the most from buffer enhancement.

Currently, restoration of these features requires cooperation of landowners. While many landowners recognize the benefits of these improvements, placing these environmental features within open space or easements of future development projects will ensure better protection and facilitate future projects.

***D. Maintain biological and habitat diversity and promote habitat connectivity by protecting undisturbed land corridors between watersheds and sub-watersheds within the Swift Creek Reservoir Watershed.***

As a result of the Resource Protection Area (RPA) regulations, each of the major tributaries within the watershed has a riparian corridor along their banks. However these RPAs do not provide enough land to promote habitat diversity and connectivity between neighboring watersheds.

- Preservation of natural areas within and between residential developments will help maintain connectivity.

- Educational efforts and enhancement of stewardship conservational roles on the part of the homeowners will help the county promote natural diversity and maintain connectivity of habitats.

***E. Minimize stormwater runoff through construction site design and site control.***

The erosion of land as a result of stormwater flows is detrimental to water quality because of the displaced sediment that is deposited into streams. The deposition of sediment loads is of particular concern during construction activity. Areas under construction are characterized by high production of suspended solids caused by erosion of unprotected, exposed soil during rain events. Excessive pollutant loads can be produced from construction areas if proper erosion-control practices are not implemented. Even with proper implementation of erosion-control practices, as required by the county, Total Suspended Solid (TSS) loads from areas under construction are significantly higher than loads from stabilized areas.

The impacts of this sediment on the receiving waters include: deterioration of aquatic habitat, deterioration of aesthetic value, loss of reservoir storage capacity, and accumulation of bottom deposits that inhibit normal biological life. In addition, sediment is a primary carrier of other pollutants, including phosphorus. In order to understand the impact of sediment runoff from construction sites in the Upper Swift Creek Reservoir Watershed, modeling of two sites was conducted. Using this information it was determined that in a typical year the watershed could see the delivery of 720 to 3,400 tons of sediment inputs from unprotected construction sites. Erosion and sediment controls are predicted to reduce the annual load to between 230 and 1,350 tons per year. If the county can maintain effective erosion and sediment controls, then, in accordance with the predicted association with TSS delivery, approximately 460 to 2,780 pounds per year of phosphorus would reach the reservoir. The Management Plan and updated modeling indicate the required maximum limit in the range between 25,000 and 26,000 pounds of phosphorus per year at projected build out of the watershed. In terms of the annual phosphorus-loading goal, the phosphorus associated with construction sediment is approximately 2 to 11 percent of the annual goal for the reservoir. Without erosion and sediment controls, the range is 1,500 to 6,970 pounds per year, or approximately 6 to 27 percent of the annual goal (see Supporting Document H).

- Erosion and sediment control practices can reduce TSS exported from construction sites by an order of magnitude. It follows that, to protect the Swift Creek Reservoir and its tributaries, particular attention should be paid to the implementation and enforcement of erosion and sediment controls.
- To ensure the protection of water quality, when a project is near or adjacent to sensitive resource features or waterbodies, additional measures that exceed the state minimum standards should be required of development, to include VDOT road projects.
- Monitoring of the watershed tributaries during storm flows would be used to assess the need for additional measures.

***F. Promote and encourage development standards for new development and redevelopment that minimize the environmental impact of improvements.***

Opportunities exist to promote and encourage new development and redevelopment methodologies using pollution prevention practices, source control measures and reduction of impervious areas. Currently these measures may be considered during the zoning process.

With future development, the county should consider the development of ordinances that will consistently apply water quality treatment measures.

- **Low Impact Development (LID):** LID employs a collection of techniques, which reduce pollutants and controls runoff by mimicking predevelopment site hydrology to store, infiltrate, evaporate and detain stormwater runoff. This control and reduction is achieved by minimizing impervious cover, conserving natural areas, and providing additional distributed stormwater management. The following are examples of LID:
  - i. **Biorentention practices** are the development of shallow landscaped depressions that capture runoff and filter it through a prepared soil mix.
  - ii. **Stormwater infiltration practices** capture and temporarily store runoff allowing it to infiltrate into the ground over a period of days.
  - iii. **Stormwater treatment practices** are a series of structural and non-structural practices that compensate for hydrologic changes related to land development by reducing runoff volume and improving water quality.

By controlling the quality, quantity and velocity of runoff, the health and supply of surface and ground water sources are better protected from the impacts of development caused pollution.

- **Development Site Design:** Better site design minimizes land disturbance, preserves existing vegetation, and minimizes impervious cover through application of a series of development principles. Examples of these principles are outlined below:
  - i. **Minimization of clearing and grading** reduces the area exposed to stormwater thereby reducing sediment discharge and the need for additional E&S measures.
  - ii. **Reducing pollutants** generated by encouraging designs and containment structures that allow for pollution prevention and spill contingency plans.
  - iii. **Remediation or interception** of pollutants by employing, after development, site-specific treatments of areas that have greater pollution potential
  - iv. **Tree Save/Preservation/Planting** is often not fully recognized for its stormwater benefits. Trees intercept and slow the fall of rainwater, helping the soil to absorb more water for gradual release into water resources. Increasing throughfall area prevents flooding, filters the water, releases water into the atmosphere, and reduces stress on the stormwater system. Based on these benefits developers should be encouraged to preserve a percentage of each lot or development to remain in a natural state. Additionally, these areas should allow for the green space habitat and wildlife corridors between neighborhoods and sub-watersheds.

***G. Promote citizen's group participation and education to aid in the protection of the Swift Creek Watershed.***

This goal recognizes the importance of the involvement of citizens to aid in the protection of water quality. Because citizen involvement is important to water quality, the county should encourage citizen groups and individual citizens to engage in activities that improve watershed awareness and active stewardship (i.e. litter clean-up campaigns and buffer management).

- Develop and distribute educational information and sponsor local watershed clean-up initiatives that would result in an overall improvement of the quality of the natural resources with the Upper Swift Creek Region.

***H. Promote watershed awareness and stewardship of residents, community associations, businesses and visitors through education programs, recreational opportunities, and participatory watershed activities.***

Citizens and businesses privately own the majority of the watershed, including most of its natural resources. Effective private stewardship of the watershed is an integral part of its protection. It is intended to expand the current educational efforts, as required under the county's VSMP permit (Supporting Document I), within the Upper Swift Creek Watershed so as to encourage responsible environmental stewardship at the individual citizen level. As the watershed becomes more urbanized, water quality resources will come under new pressures. Currently, stormwater data from the Brandermill and Woodlake subdivisions indicate elevated levels of nutrient inputs during the Fall and Spring seasons that most likely a result of lawn care. As new residential developments are built, this trend is expected to continue. This data suggests citizens living in the watershed should be educated on nutrient pollution, to include education on the proper techniques for home and lawn care. In addition to educational efforts, the county also promotes active participation in watershed activities such as stream and lake monitoring, riparian buffer planting and stream clean-ups. Passive and active recreational activities, such as hiking and boating, are another way to raise watershed awareness through trails, nature centers and fishing tournaments.

- **Education and Outreach (on-going program):** Publications and programs should be developed to specifically address the challenges and issues of the Upper Swift Creek Watershed, stressing the importance of protecting the Swift Creek Reservoir as a primary drinking water source. The citizens of this watershed should have a heightened awareness of the watershed in which they live and their personal effects on the water quality. This can be accomplished by working the various audiences. This could include:

Working with the county schools to develop a special curriculum for schools in the USC, develop a county-sponsored volunteer program specifically for watershed residents and to encourage homeowners associations to include water quality measures such as RPA-Buffer Management and yard maintenance language in their covenants especially for citizens on and around the lake.

- **Stormwater Management and Source Controls:** For existing developments, identify areas where stormwater maintenance and retrofitting may be possible and necessary to maintain water quality. Develop a mechanism to make funding available to implement these retrofits. Successful retrofit projects will be limited by environmental factors, monetary concerns and public support. Some of the retrofit strategies are outlined below and should also be considered in new development projects:
  - a. Rain barrels and dry wells for citizens' homes and businesses
  - b. Bioretention facilities, where soils permit
  - c. Outfall controls (end of pipe treatments or facilities that divert smaller storms, provide energy dissipation, and/or treatment of stormwater)
  - d. Retrofit culverts and drainage systems
  - e. Retrofit and/or construct stormwater facilities

- f. Wetland and Stream Channel protection
- g. Manufactured BMPs (non-residential areas only)

**Ordinance Amendments:**

Adopt amendments to the zoning and other ordinances, as necessary, which would require development to treat storm water runoff on-site. Storm water impacts generated by new construction should be addressed on-site until such time that the county can develop a new regional approach to treat storm water.

**Financial Strategies:**

Develop an affordable and effective watershed management plan by devising strategies that build upon existing regulations, programs, and policies, take advantage of established monetary resources, and better target the management budget for more expensive land acquisitions and structural stormwater practices. Increased coordination between agencies with jurisdiction in the watershed, such as VA Department of Transportation (VDOT), County of Powhatan, VA Department of Forestry, VA Department of Environmental Quality, the Army Corp, public utilities, and the county will be more effective in implementation of the watershed plan.

## **Upper Swift Creek Plan Land Use Categories (See accompanying Land Use Plan Map)**

**General Note:** Suggested densities of development include all property suggested for such densities regardless of any development limitations that may exist or may be anticipated (such as planned roads or other public facilities, environmental or topographic features, areas suggested on the plan for conservation/recreation, etc.)

**Residential (2.0 or less dwelling units per acre):** Residences, places of worship, schools, parks and other similar public and semi-public facilities.

**Note 1 on Land Use Plan map:** Projects that drain away from Swift Creek Reservoir would be appropriate for densities of up to 2.2 dwelling units per acre.

**Office/Residential Mixed Use:** Professional and administrative offices and residential developments of varying densities. Supporting retail and service uses would be appropriate when part of a mixed use center of aggregated acreage under a unified plan of development. (Equivalent zoning classifications: R (various), O-2)

**Note 4 on the Land Use Plan map:** Regional mixed use may be appropriate in the northwest quadrant of the Route 288 /Hull Street Road interchange, based on existing, planned and/or proffered road improvements, as well as provision of adequate design standards to address land use transitions, design compatibility, visibility from area roads, etc.

**Deferred Growth:** Primarily limited to agricultural and forestall uses, isolated single-family residences on large parcels, places of worship, and other similar semi-public facilities. Other types of development, including public facilities such as public schools and parks, as well as the extension public water and wastewater services, should be deferred until the plan is amended through a subsequent review. (Equivalent zoning classification: A)

**Community Mixed Use:** Community scale commercial uses, including shopping centers, and service and office uses that serve community wide-trade areas. Residential uses of various types and densities may be appropriate if part of a larger mixed-use project and the design is integrated with other uses. (Equivalent zoning classification: C-3)

**Note 2 on the Land Use Plan map: Community Mixed Use Node:** Community scale commercial uses including, but not limited to, shopping centers, service and office uses that serve community wide trade areas. Residential uses of various types and densities may be appropriate if part of a larger mixed use project and the design is integrated with other uses. The size and location of centers, and the mix of uses, should be determined in part by market area, availability of adequate access to the transportation system, and availability and suitability of land. In general, however, community-scale mixed use centers should be located at the intersections of major arterial roads. Intersections should be analyzed to determine which quadrant is best suited (through detailed analysis of land assembly, access or impact on residential uses) for a center, and the center should be located only on the superior site. Commercial uses should be located at one corner of the intersection and be surrounded by office and residential use transitions. (Equivalent zoning classification: C-3)

**General Business Mixed Use:** General commercial uses including, but not limited to, automobile-oriented uses and light industrial uses. (Equivalent zoning classification: C-5)

**Note 6 on the Land Use Plan map:** Properties not currently zoned for General Business Mixed Use should, at the time of zoning, be aggregated to sufficient acreage to ensure that development is oriented away from area roads.

**Regional Mixed Use:** Integrated office, regional commercial, higher density residential and light industrial park uses incorporated into a mixed use center of aggregated acreage under a unified plan of development. (Equivalent zoning classifications: C-4, I-1)

**Note 3 on the Land Use Plan map:** Outside storage might be appropriate in this area if such outside storage is oriented internal to a project and away from roads.

**Employment Center:** Integrated corporate office, research and development, and light industrial uses on acreage of sufficient size to allow a unified plan of development. Moderate industrial uses may be appropriate when designed, located and/or oriented to ensure compatibility with less intense uses, and where appropriate access and transitions are provided. Retail and service uses that serve primarily surrounding employment center uses may be appropriate when part of a larger industrial and/or office development. The scale and mix of such retail and service uses should be proportionate to the needs of the primary employment center uses and should not be built until the employment center uses have developed to a density sufficient to support such retail and service uses, without such retail and service uses having to rely on larger markets for financial success. (Equivalent zoning classifications: I-1, I-2, O-2)

**Convenience Commercial** (not shown on Plan): Small scale uses, such as limited retail and personal services, when located within planned residential areas and designed to attract customers primarily from immediate neighborhoods only. Typically, such uses should: be planned in conjunction with residential projects in order to insure compatibility; be limited in size and acreage; be located at the intersections of collector streets, or between residential neighborhoods and higher intensity uses and/or arterials; and provide transitions through consideration of appropriate uses, building scale, architecture and site design. Such areas require detailed analysis to ensure compatibility; therefore, individual locations cannot be depicted on the Land Use Plan map. (C-1)

**Public:** Significant publicly owned properties (county, state and federal), including schools, parks, cemeteries and other public facilities, as well as publicly owned vacant land. Should such land be redeveloped for other uses, the appropriate uses would be those that are compatible with surrounding existing or anticipated development, as reflected by existing land uses, zoning, and/or the recommended land uses on the adopted comprehensive plan.

**Conservation/Recreation:** Lands adjacent to water bodies with perennial flow that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may cause significant degradation to the quality of state waters. Recommended land uses are those in conformance with the Chesapeake Bay Preservation Area, Upper Swift Creek Watershed, and other environmental provisions of the Chesterfield County Zoning Ordinance. Where appropriate, some areas may be suitable for limited pedestrian and bicycle trails, or for other passive recreation activities.



**General Note:** Density of development for residential and non-residential zoning requests that include areas suggested on the plan for conservation/recreation should be calculated on the gross acreage for all property included in the request, including areas suggested for conservation/recreation, based on the recommended densities of the plan.

**General Note:** The boundaries of conservation/recreation areas depicted on the plan are generalized.

**Draft  
Proposed Upper Swift Creek Plan Amendment  
as of 8/17/05**

